

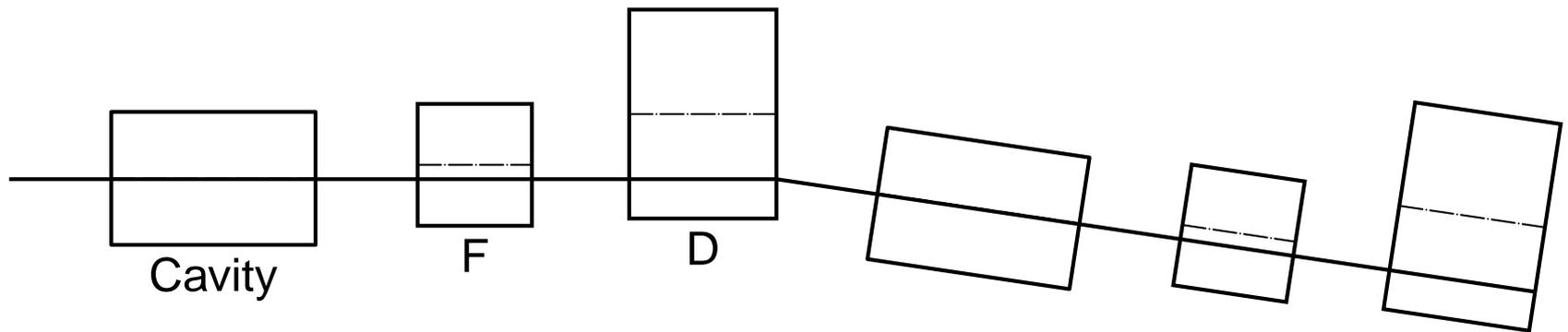
# **EMMA Lattice**

## **Cavity and Magnet Axes Parallel**

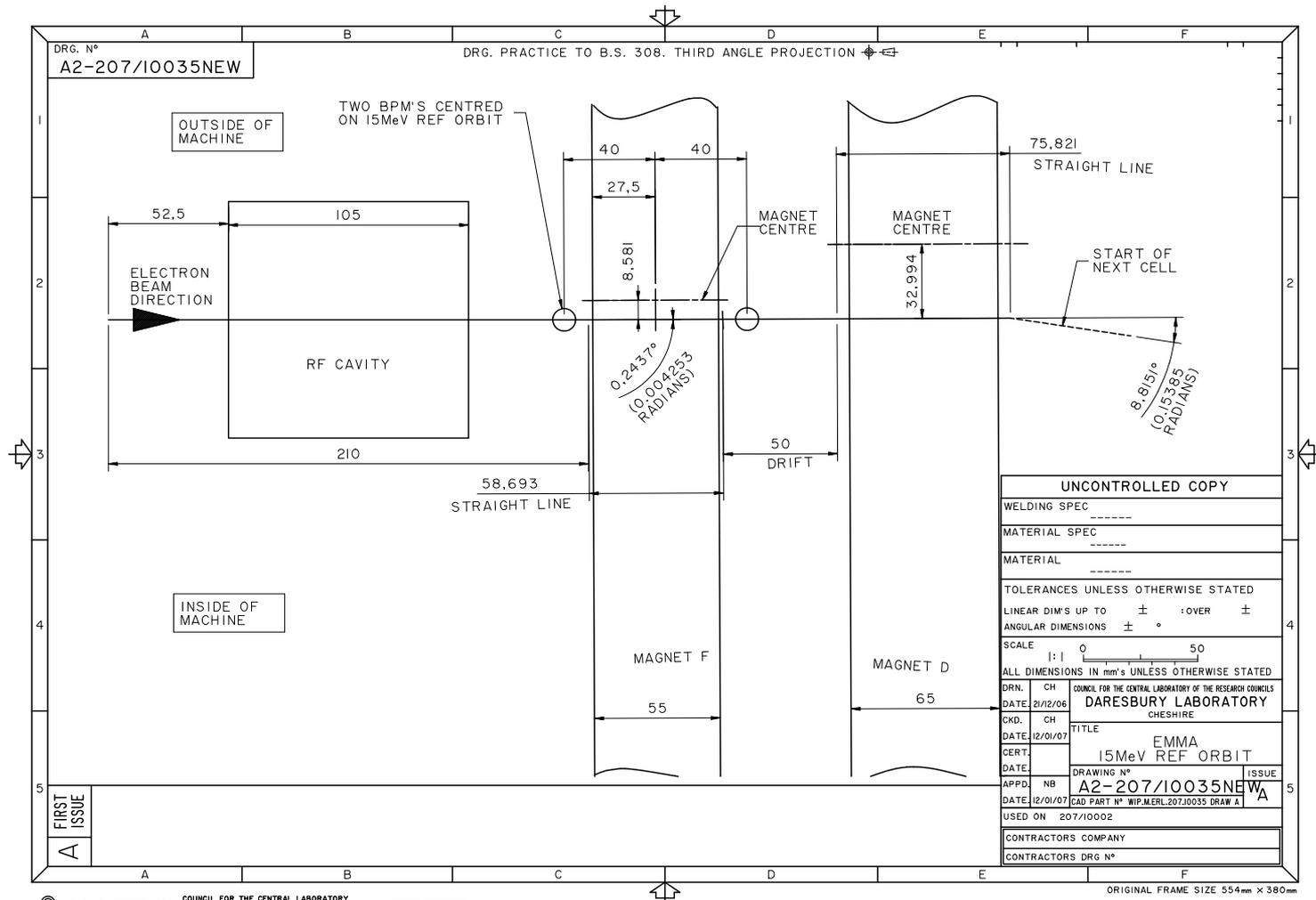
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EMMA Phone Meeting  
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# Changes to Lattice

- When magnets were made parallel to each other, angle with respect to cavity axis was small
- Make cavity axis parallel to magnet axes



# Only Magnets Parallel



# Making Cavity Parallel to Magnets Geometry

- Geometry changes are minor

	Before 070113b	After 070119a
Long drift (mm)	210.000	210.000
F entrance angle (mrad)	-4.253	0.000
F length (mm)	58.693	58.782
Short drift (mm)	50.000	50.000
D length (mm)	75.821	75.699
D exit angle (mrad)	153.853	149.600

# Making Cavity Parallel to Magnets

## Apertures and Gradients

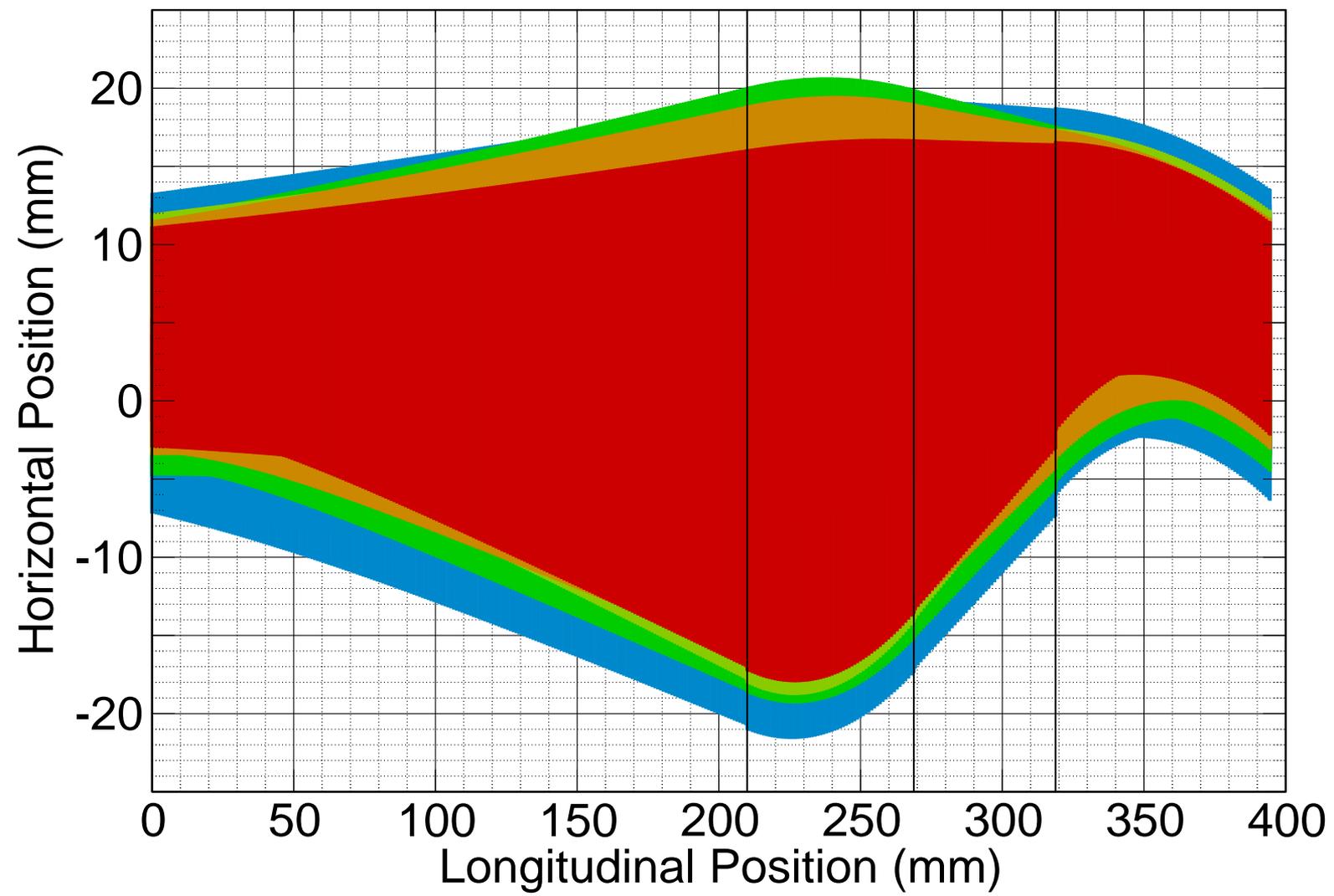
- Aperture, gradient, frequency range requirements don't change much

	Before 070113b	After 070119a
Cavity aperture (mm)	34.725×10.570	34.734×10.571
D Pipe (mm)	24.936×11.678	24.876×11.678
F Pipe (mm)	42.280×8.905	42.319×8.907
D Quad Max (mm)	54.621	54.564
F Quad Max (mm)	31.804	31.843
D Gradient Max (T/m)	-4.838	-4.845
F Gradient Max (T/m)	6.860	6.849
Frequency Range (kHz)	5488	5582

# Horizontal Beam Footprint

- Sequence is long drift, F quad, short drift, D quad
- Placing BPM near D quad requires wider pipe aperture
  - ◆ Looks like it would require around 3 mm extra width (BPM extends out around 1.8 cm)
- Jumps at D (smaller ones at F) are real
  - ◆ End fields of quad
  - ◆ Real system will be smoother, of course
  - ◆ Requires expanded aperture
    - ★ D pipe width increased from 24.876 to 26.182
    - ★ Max distance into D increased from 54.564 to 55.960

# Horizontal Beam Footprint



# BPM Close to D Quad

